

Cypress Shelter

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1800 Samish Indians inhabit Guemes Island in Washington State. Cypress Island is one of their hunting grounds and is located 90 minutes away by dugout canoe.

1850 Gwuhng-kung-EH-luh village on Guemes Island has one 40' x 400' longhouse built by 9 men for 25 families or 640 square feet per family.¹

1958 The United States Indian Claims Commission recognizes Cypress Island as one of the Samish tribal lands "since aboriginal times."

1983 Jim Bain discovers a basket artifact in a cave on the Friends of Destiny Bay property, Cypress Island.

2000 Friends of Destiny Bay commission Blake Williams to design tent platforms for their wooded property on Cypress Island.

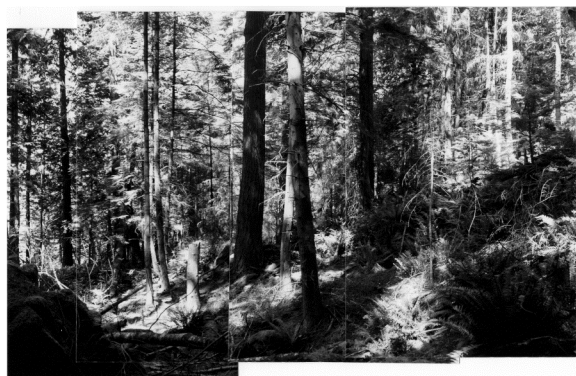


Fig. 1. Project Site

Arrival

In spring of 2001 I was commissioned to design a cabin for several members of the

Friends of Destiny Bay, a cooperative group of environmentalist land owners who own approximately 25 acres on the northwest coast of Cypress Island, Washington. Located between Blakely Island (west) and Guemes Island (east) Cypress Island has an area of 6.2 square miles, two lakes and is largely undeveloped. The members take weekend trips during the summer for short stays in tents on the beach. Two members constructed primitive cabins that are supposedly available for all members, but the cooperative has also designated sites for individual members' families to construct small cabins. Camping trips on Cypress have been an ongoing activity since the 1960s, when they purchased the property. The majority of the island is managed by the Washington State Department of Natural Resources (DNR) and is a popular destination for kayakers and hikers. Cypress Island is not served by ferry service so development that is typical of the other major islands in the San Juans has not occurred. Utilities are nonexistent so the cabins that do exist rely on wood and propane fuel. One of these cabins features a modest rainwater collector fashioned from a plastic tarp that directs raindrops into a plastic kids' swimming pool. In this primitive setting, members arrive by boat with their camp gear, food and water and generally stay until their provisions have run out.

Site and Program

Over several meetings, the members described the need for an elevated tent platform over the rugged terrain in their wooded building site approximately 100 feet from the beach. The discovery of an Indian basket in a much hidden cave by member Jim Bain during the early 1980s added a historical reference to our design discussions. Within canoe range of Cypress Island, it is likely that Cypress served as a hunting/gathering ground; however, the hidden cave discovered by Jim Bain suggests that it was a sufficient place for hiding from the fierce northern tribes. While the Burke Museum excavated the Bain site, it did not find more than a couple fragments. As of today, excavations are ongoing.

The members and I took a weekend boating expedition to Cypress Island. The building site was covered with fallen trees, moss and rock outcroppings. The new design would have to work around a few magnificent cedar trees. Solar access was minimized by a dense forest. Sunlight dappled the ground only in the early

morning and from mid afternoon until sunset. The members had talked about whether or not to include a composting toilet or a small privy pit. We slept under a starry night on the beach talking about the island, the Salish history and design possibilities.

Inspiration

Early into the project I looked at the northwest coast Salish longhouse. These massive structures, sometimes up to 500 feet long x 60 feet wide,² consist of a long, rectangular form with shed or gable roof and a single doorway. The frame is post and beam and the whole frame is clad on the interior side with planks laid horizontally or vertically and/or enormously scaled shakes. These logs were joined by skilled craftsmen who cut joints using the hand-adze. In plentiful supply, Red Cedar was the preferred wood. Exteriors were not decorated in the bright polychrome form lines³ as practiced by northern coastal tribes. Minimal interiors were efficiently organized by booths on each side of a center aisle that are divided by wooden storage boxes and cabinets. A fire pit was in the center of each booth. In this setting, extended families lived together under one roof. The space was dimly lit, relying on smoke holes in the ceiling. Given the predominant rainfall of the region, one can imagine the rain mixing with wisps of smoke through the smoke hole. This was accompanied by the smell of cedar planks intermingling with cured salmon and the salt air from the nearby beach. Inside this economical structure was a place that truly engaged the senses.



Fig. 2. Preliminary Design

False Start

The members reviewed my preliminary design (Fig. 2) and decided to proceed. They engaged a local contractor who had built houses throughout nearby islands in the San Juans. We worked together, looked at my preliminary sketches and sited two structures. The contractor noted significant challenges to building on this site and suggested as much prefabrication

as possible. After a few more months the owners cancelled the project. They explained that they were feeling less adventuresome in their retirement years. The reality of a financial commitment towards the rugged island recreation did not seem so appealing anymore and the hauling of gear, food and water to a site without utilities was just too primitive.

Transition

The renewed interest in prefabricated architecture that was occurring by the late 1990s saw a number of new prefabricated house designs come onto the market. Rocio Romero's LV home hit the market in 2001. The Dwell Magazine competition picked up on the interest in affordable modern houses and launched the Dwell Homes with Empyrean in 2003. Michelle Kaufman, in collaboration with Sunset Magazine displayed the Breezehouse in 2005. These were sophisticated, modern prefabricated houses with minimalist details for contemporary tastes. In terms of affordability, the promise of reduced costs was not entirely met. With the exception of the LV home, prices for several architect-designed prefabs are in the range of \$200 to \$400 per square foot.⁴ Compared to the construction cost of simple, stick frame production houses at \$125 per square foot these houses remain out of the affordable category. With this in mind, my design for the Friends of Destiny Bay was worth revisiting to fill out a category of non-house modern vacation cabins. At present my early design has become a work in progress. (Fig. 3)

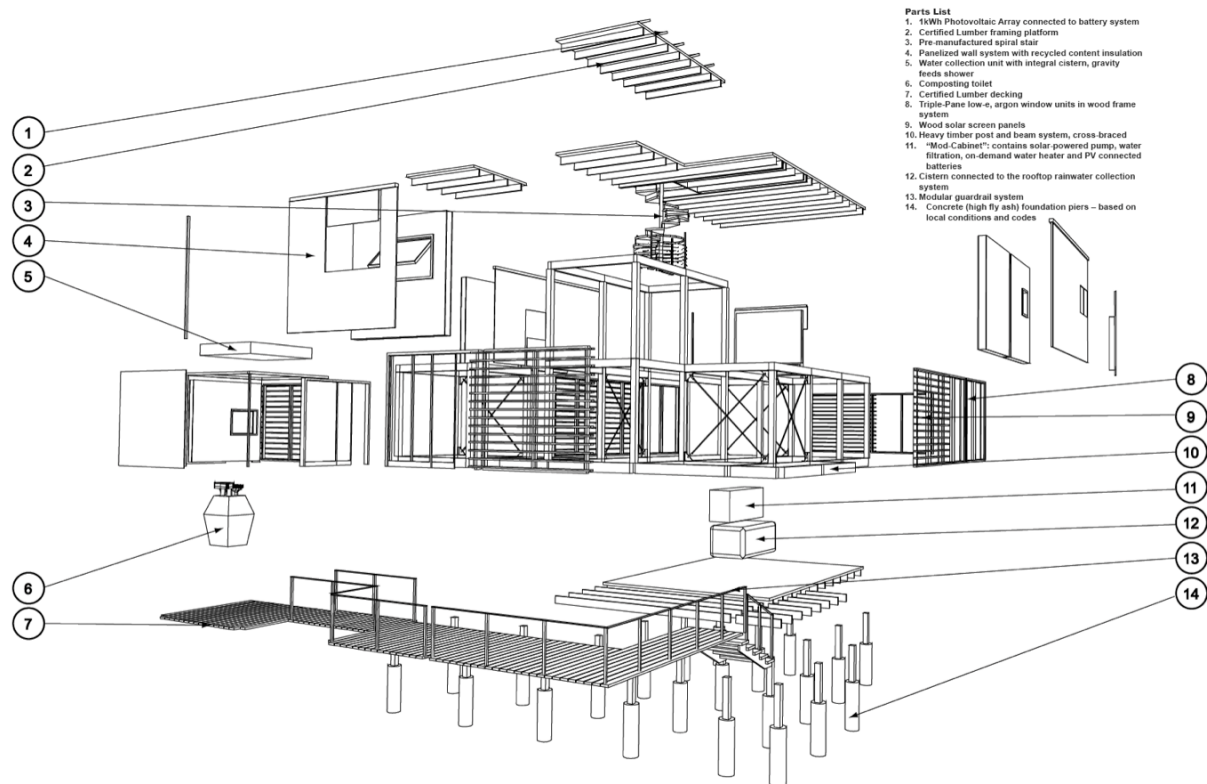


Fig. 3. 2-story Cypress Shelter

Keeping It Simple: Frame and Panel

Inspired by the economy of the Salish long-house, my Cypress Shelter is a prefabricated post and beam system that can be adapted by designers to address site conditions and program needs. Diagrams keyed to material lists and prices give designers all the needed information to lay out the shelter according to site, need and budget (Fig. 4). The exposed 8-foot posts and beams are anchored to concrete foundations, combined horizontally and vertically to create an entire shelter. Steel rod and clevis braces are designed to withstand Zone 3 earthquakes. The frame would go up looking somewhat like a Sol Lewitt sculpture until pre-cut joists, wood decking and exterior panels are attached and exposed to the interior. The designer's placement of opaque, glazed and screened panels defines the private, semi-private and exterior spaces. There are no interior applied finishes. Finally, the roofing, exterior decks and any of the optional building systems or fixtures are attached. The majority of materials is either stock or can be ordered from home improvement stores such as Home Depot or Lowe's. Certified timbers and glazing

units would be obtained by special order. The steel lateral bracing is repetitive, but must be ordered separately through a steel fabricator. Panel options include SIP panels with punched window openings, insulated glass panels, sliding glass doors and wood screens. Two-story Cypress Shelters require the spiral stair kit. Exterior decks are based on the same 8 foot structural grid.

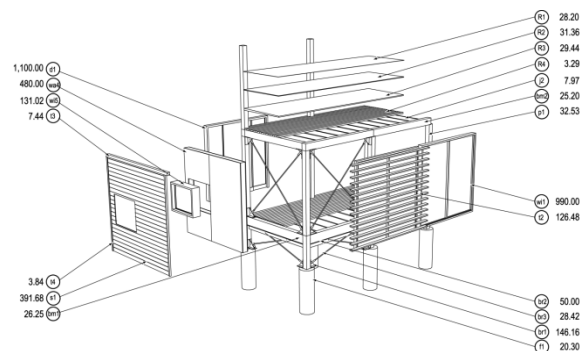


Fig. 4. Cypress Shelter Modular Components

Forced Into Portability

Design constraints often lead architects to re-think conventions and find practical alterna-

tives. Unlike conventional construction at a job site where materials and products are stored for use, the unusual conditions of the Cypress site inspired me to reevaluate the delivery approach. Large, prefabricated modules were impossible to ship to Cypress Island. Instead, all of the individual elements could be shop fabricated and shipped to the site for assembly. Elements that are not readily available in stock storage are designed to fit within available sizes of stock materials. This overall strategy is intended to reduce waste and simplify the design process, while maintaining flexibility to address various site conditions. Indirectly, this approach may result in a cost reduction compared to standard modular prefabrication. The well known Sears Kit Homes were based on a similar strategy of precut components that were shipped to the site by railway and assembled by homeowners. That has been replaced by today's trucking and distribution to builders from home improvement stores.

Building System Add-Ons

The difference between the Cypress Shelter and a house is even more evident in the approach to mechanical, electrical and plumbing systems. While a typical home may have flush toilets, lights, receptacles, heating and air conditioning, the Cypress Shelter minimizes these systems from the base system and introduces them as options: compost toilet, gravity rain-water shower and photovoltaic charged electric floor heat. These systems are added by the designer according to need rather than including them as standard to a particular model as in most modular prefabs. Like the Salish storage boxes that subdivide space, the Cypress Shelter has a single kitchen base cabinet that appropriates the living spaces. Intended for food preparation, it contains a sink with lever action hand pump, shelving and a countertop niche for a propane stove. Outside and directly beneath the cypress shelter base cabinet is a fiberglass-polyethylene cistern that feeds the hand pump. The lack of utilities at Cypress Island has again inspired me to consider how to harness the simple lifestyle of an earlier era with our modern technology for the delivery of shelter.

Affordable Delivery Alternative

Home builders are frequently criticized by architects for selecting stock plans that do not fit the site, but are more about historical styles. In order to reduce their costs and bring afford-

able houses to the marketplace, some builders rely on this technique for their planning and distribution. Architects should consider ways to compete with this model. An alternate delivery method combines the kit-design approach (Sears) with existing material distribution networks (Home Depot). In this scenario, non-skilled labor could obtain nearly all the materials from a nearby store, purchase a design, a pre-configured shopping list and assembly instructions from an architect. Working with a general contractor, the estimated installed cost is \$47,000 for the 512 square foot, 2-story shelter (Fig. 5) or \$90.00 per square foot.⁵ That translates into \$5,800 for the basic 8-foot module without any additional systems. If the design is simple, consisting of repetitive structure and limited components that can be built with hand tools, the construction costs are reduced. While this cost does not include the systems and finishes you would include in a house, it is a step towards affordable shelter.



Fig. 5. Cypress Shelter Computer Rendering

Notes

¹ Marion Smith, "The Coast Salish of Puget Sound," *American Anthropologist*, v. 43, 1941, pp. 197-211.

² The Old Man House or Ole-man, meaning "Strong Man" in Chinook was the home of Chief Sealth. The enormous size may be attributed to the joining of several longhouses. The longhouse was destroyed by the United States in 1870 after Sealth's death to encourage tribal members to spread out and become farmers. The site is currently owned by the Suquamish Tribe and is used as a park.

³ Form lines refers to the abstract outline form that coastal tribes used to depict figures, thunderbirds, whales in their artwork and, in particular their carvings.

⁴ MK prefab website lists \$250-\$275/sf; Living Homes website lists \$180-\$250/sf; Marmol Radziner website lists \$270-\$440/sf.

⁵ The total estimate, including transportation, overhead and profit was \$80,000.